



Dell OptiPlex 9020

Technical Guidebook

Inside the OptiPlex 9020

SPECIFIC FEATURES/ MODELS/CONFIGURATIONS/OPTIONS DISCUSSED IN THIS DOCUMENT MAY NOT BE AVAILABLE IN ALL REGIONS

Table of Contents

Mini Tower Computer (MT) View	5
MT Motherboard Layout	7
Small Form Factor Computer (SFF) View	8
SFF Motherboard Layout	9
Ultra Small Form Factor (USFF) View	10
USFF Motherboard Layout	10
Micro Computer View	12
Micro Motherboard Layout	12
Optional PS2 / Serial Port	14
Marketing System Configurations	15
Operating System	15
Chipset	15
Processor	16
Memory	17
Drives and Removable Storage	17
System Board Connectors	19
Graphics / Video Controller	20
External Ports / Connectors	20
Communications – Integrated Intel i217LM	21
Communications – Wireless	21
Audio and Speakers	22
Keyboards and Mouse	22
Security	23
Software	23
Environmental	23
Service and Support	23
Mounting Options (9020 Micro only)	24
Detailed Engineering Specifications	26
System Dimensions (Physical)	26
Micro Mounting Dimensions (Physical)	26
System Board Connector Maximum Add-in Card Allowable Dimensions	27



System Level Environmental and Operating Conditions.....	28
POWER	28
Audio.....	31
Communications – Integrated Intel I217	31
Communications – Network Adapter	32
1394 Firewire PCI Add-in Card	33
Communications – Wireless 1540 WLAN CARD (802.11n).....	34
Communications – Wireless 7260AC Micro	34
Communications – Serial/Parallel Port PCIe ADD-In Card	35
Communications – Serial Port PCIe Add-In Card.....	35
Graphics / Video Controller.....	37
Onboard Graphics.....	37
1GB AMD RADEON HD8490	37
1GB AMD RADEON HD8570	39
1GB NVIDIA GEFORCE.....	39
Hard Drives	40
3.5" 1TB SATA3 7200 RPM HDD.....	40
3.5" 500GB SATA3 7200 RPM HDD.....	41
2.5" 500GB SATA 7200 RPM HDD.....	41
2.5" 500GB SATA3 5400 RPM HYBRID HDD W/8GB FLASH	42
2.5" 500GB SATA 5400 RPM SECURE ENCRYPTED DRIVE	43
2.5" 1TB SATA3 5400 RPM HDD	43
2.5" 2TB SATA3 5400 RPM HDD	44
2.5" 128GB SOLID STATE DRIVE	45
2.5" 256GB SOLID STATE DRIVE.....	45
Optical Drives	46
DVD-ROM.....	46
DVD-RW	47
Media Card Reader (MCR).....	48
BIOS Defaults	50
CHASSIS ENCLOSURE & VENTILATION REQUIREMENTS	53
ENCLOSURE VENTILATION.....	53

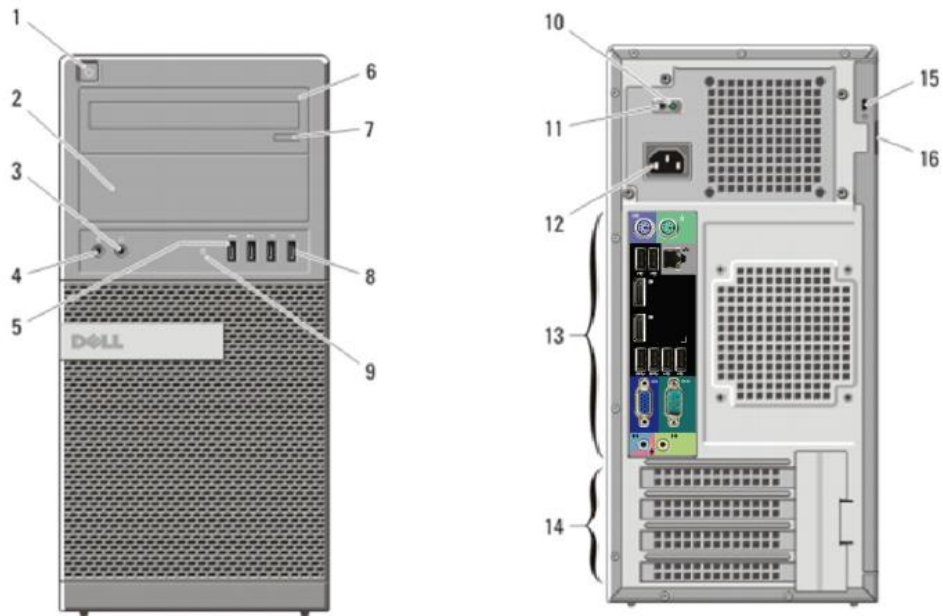


ENCLOSURE MINIMUM CLEARANCE.....	53
RECOMMENDED ENCLOSURE.....	53
OPEN DESK MINIMUM CLEARANCE.....	53
REGULATORY AND ENVIRONMENTAL COMPLIANCE.....	54
Acoustic Noise Emission Information.....	55
OptiPlex 9020 MT	55
Declared Sound Power (LWAd).....	55
A-Weighted Sound Pressure Level (dB).....	55
Acoustic Noise Emission Information.....	56
OptiPlex 9020 SFF	56
Declared Sound Power (LWAd).....	56
A-Weighted Sound Pressure Level (dB).....	56
Acoustic Noise Emission Information.....	57
OptiPlex 9020 USFF	57
Declared Sound Power (LWAd).....	57
A-Weighted Sound Pressure Level (dB).....	57
Acoustic Noise Emission Information.....	58
OptiPlex 9020 Micro.....	58
Declared Sound Power (LWAd).....	58
A-Weighted Sound Pressure Level (dB).....	58



Overview

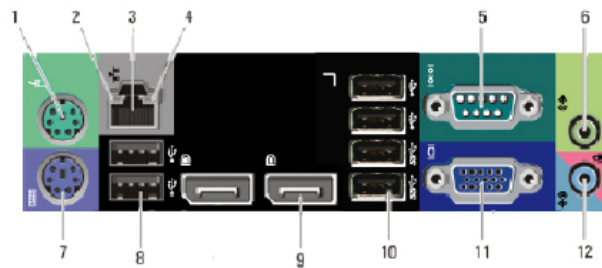
Mini Tower Computer (MT) View



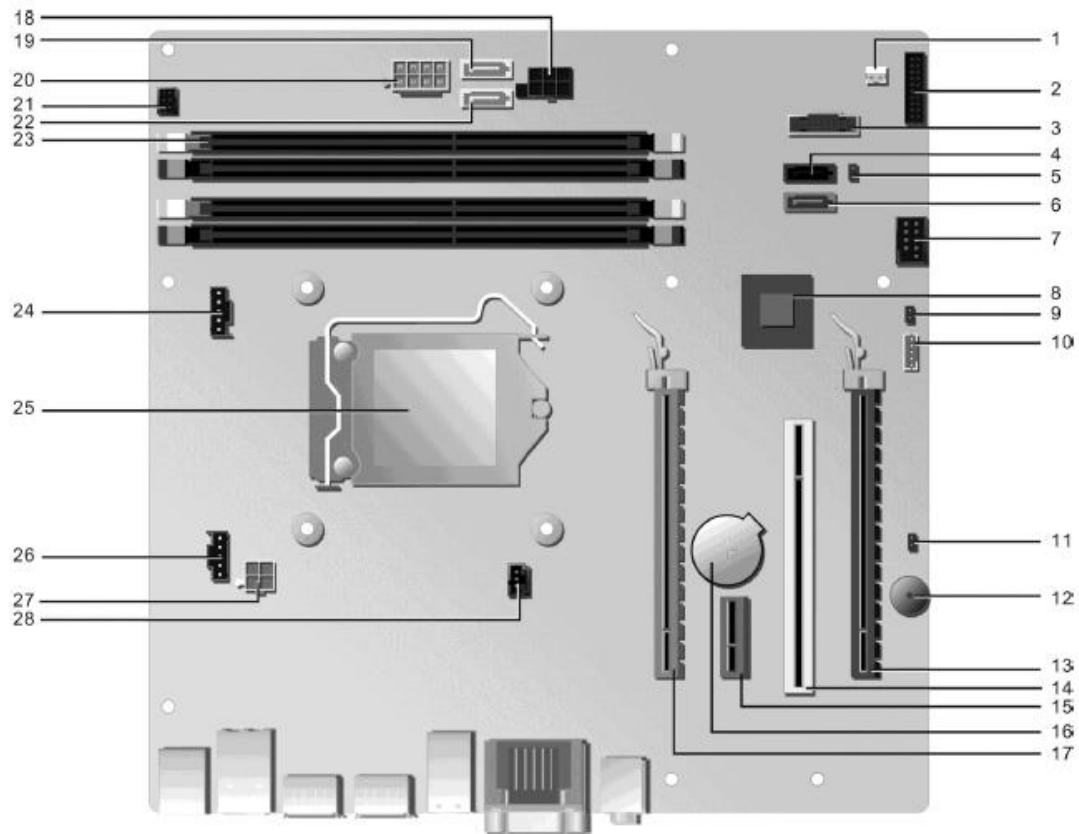
FRONT VIEW			
1	Power Button, Power Light	6	Optical Drive (optional)
2	Optical Drive Bay (optional)	7	Optical Drive Eject Button
3	Headphone Connector	8	USB 2.0 Connectors (2)
4	Microphone Connector	9	Drive Activity Light
5	USB 3.0 Connectors (2)		

BACK VIEW			
10	Power Supply Diagnostic Light	14	Expansion Card Slots (4)
11	Power Supply Diagnostic Button	15	Kensington / Noble Security Cable Slot
12	Power Connectors	16	Padlock Ring
13	Back Panel Connectors		

BACK PANEL CONNECTORS			
1	Mouse Connector	7	Keyboard Connector
2	Link Integrity Light	8	USB2.0 Connectors (2)
3	Network Connector	9	DisplayPort Connector (2)
4	Network Activity Light	10	USB2.0 Connectors (2) USB3.0 Connectors (2)
5	Serial Connector	11	VGA Connector
6	Line-out Connector	12	Line-in/Microphone Connector

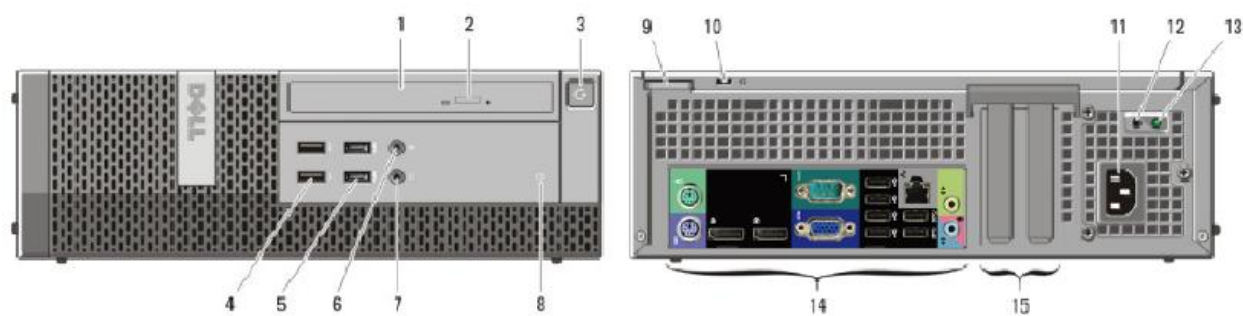


MT Motherboard Layout



Num-ber	Name	Number	Name
1	Thermal Sensor Connector (THRM_2)	15	PCI-e x1 Connector (SLOT2)
2	Front IO Connector (FRONTPANEL)	16	Battery Connector (BATTERY)
3	Front USB3.0 Connector (USB3_FRONT)	17	PCI-e x16 Connector (SLOT1)
4	SATA 1 Connector (SATA1) (Black color)	18	HDD_ODD_Power Cable Connector (HDD_ODD_POWER)
5	PSWD Jumper (PSWD)	19	SATA 3 Connector (SATA3) (White color)
6	SATA 0 Connector (SATA0) (Blue color)	20	P1 Power Connector (POWER)
7	Internal USB Connector (INT_USB)	21	Power Switch Connector (PWR_SW)
8	PCH chip (N/A)	22	SATA 2 Connector (SATA2) (White color)
9	RTCRST Jumper (RTCRST)	23	Memory Connectors (DIMM1, DIMM2, DIMM3, DIMM4)
10	Internal Speaker Connector (INT_SPKR)	24	CPU fan Connector (FAN_CPU)
11	SERVICE_MODE Jumper (SERVICE_MODE)	25	Processor Socket (N/A)
12	Buzzer (BEEP)	26	System Fan Connector (FAN_SYS)
13	PCI-e x16 (wire x4) Connector (SLOT4)	27	P2 Power Connector (12V_PWRCONN)
14	PCI Connector (SLOT3)	28	Intrusion Switch Connector (INTRUDER)

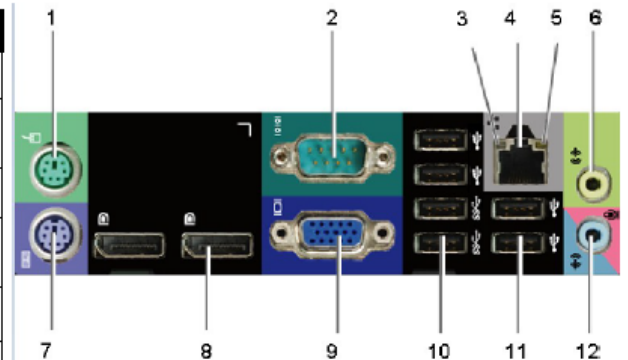
Small Form Factor Computer (SFF) View



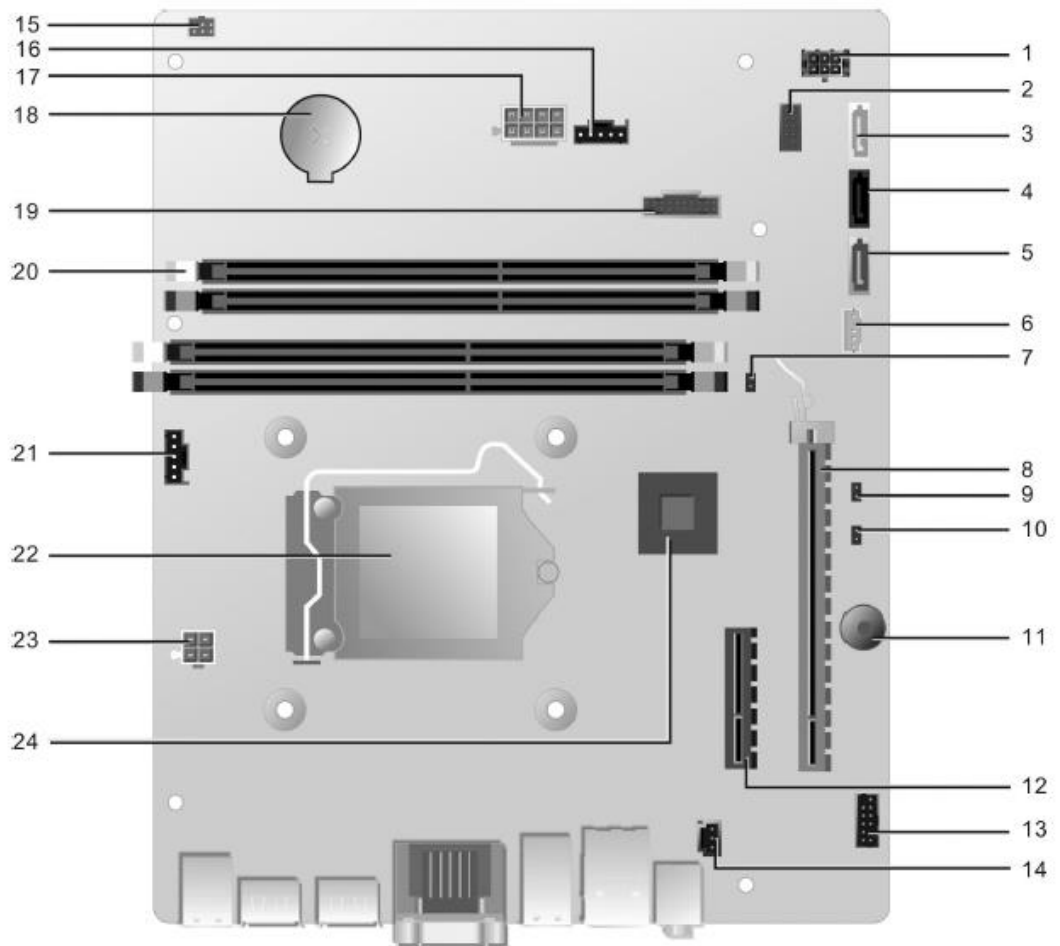
FRONT VIEW			
1	Optical Drive	5	USB 3.0 Connectors (2)
2	Optical Drive Eject Button	6	Microphone Connector
3	Power Button, Power Light	7	Headphone Connector
4	USB 2.0 Connectors (2)	8	Drive Activity Light

BACK VIEW			
9	Padlock Ring	13	Power Supply Diagnostic Light
10	Kensington / Noble Security Cable Slot	14	Back Panel Connectors
11	Power Connectors	15	Expansion Card Slots (2)
12	Power Supply Diagnostic Button		

BACK PANEL CONNECTORS			
1	Mouse Connector	7	Keyboard Connector
2	Serial Connector	8	DisplayPort Connector (2)
3	Link Integrity Light	9	VGA Connector
4	Network Connector	10	USB2.0 Connectors (2) USB3.0 Connectors (2)
5	Network Activity Light	11	USB2.0 Connectors (2)
6	Line-out Connector	12	Line-in/Microphone Connector

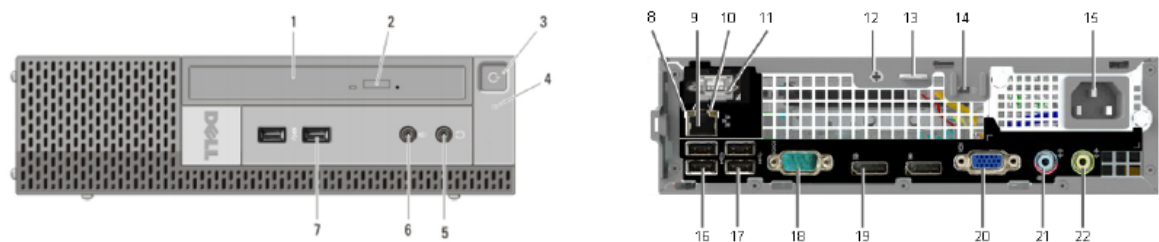


SFF Motherboard Layout



Number	Name	Number	Name
1	HDD_ODD_Power Cable Connector (HDD_ODD_POWER)	13	Front Audio Connector (FRONT_AUDIO)
2	Front IO Connector (FRONTPANEL)	14	Intrusion Switch Connector (INTRUDER)
3	SATA 2 Connector (White color)	15	Power Switch Connector (PWR_SW)
4	SATA 1 Connector (Black color)	16	System Fan Connector (FAN_SYS)
5	SATA 0 Connector (Blue color)	17	P1 Power Connector (POWER)
6	Internal Speaker Connector (INT_SPKR)	18	Battery Connector (BATTERY)
7	RTCRST Jumper (RTCRST)	19	Front USB3.0 Connector (USB3_FRONT)
8	PCI-e x16 Connector (SLOT2)	20	Memory Connectors (DIMM1, DIMM2, DIMM3, DIMM4)
9	PSWD Jumper (PSWD)	21	CPU fan Connector (FAN_CPU)
10	SERVICE_MODE Jumper (SERVICE_MODE)	22	Processor Socket (N/A)
11	Buzzer (BEEP)	23	P2 Power Connector (12V_PWRCONN)
12	PCI-e x4 Connector (SLOT1)	24	PCH chip (N/A)

Ultra Small Form Factor (USFF) View

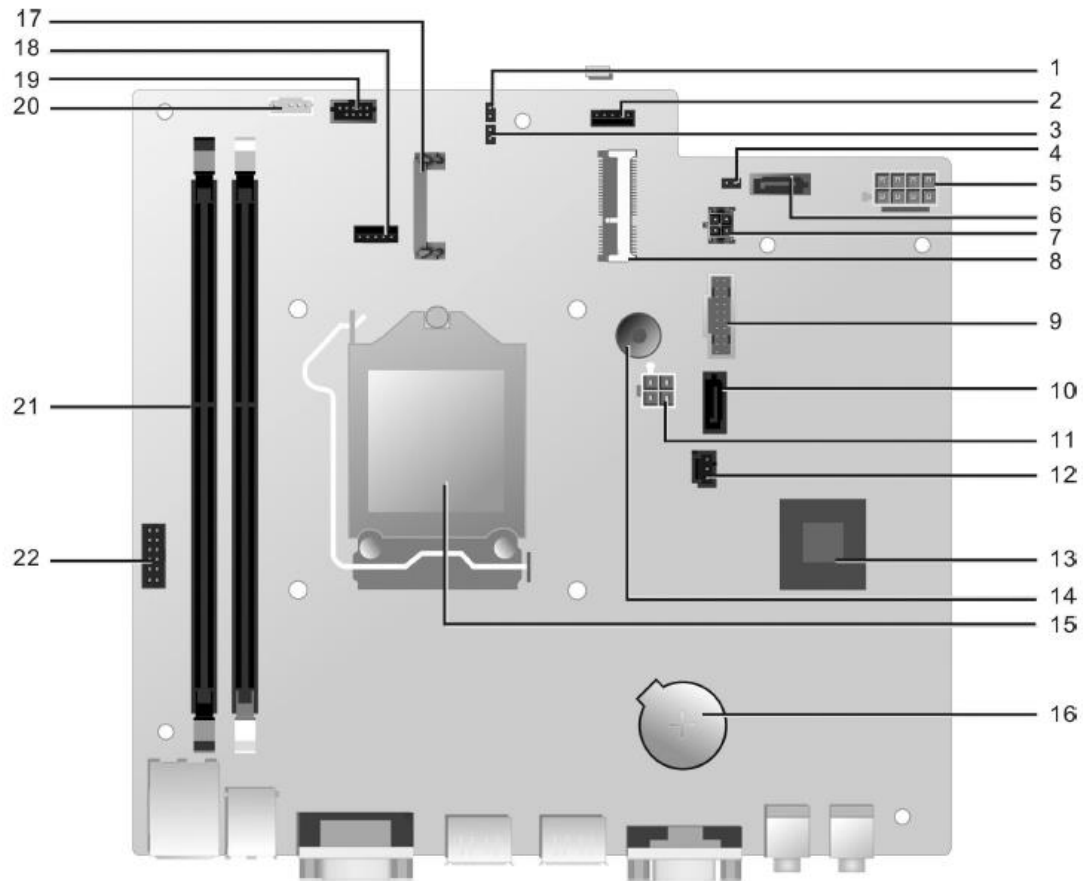


FRONT VIEW			
1	Optical Drive	5	Headphone Connector
2	Optical Drive Eject Button	6	Microphone Connector
3	Power Button, Power Light	7	USB 3.0 Connectors (2)
4	Drive Activity Light		

BACK VIEW			
8	Link Integrity Light	16	USB 2.0 Connectors (2)
9	Network Connector	17	USB 3.0 Connectors (2)
10	Network Activity Light	18	Serial Connector
11	Wi-Fi Antenna (optional)	19	DisplayPort Connector (2)
12	Captive Thumbscrew	20	VGA Connector
13	Padlock Ring	21	Line-in/ Microphone Connector
14	Kensington / Noble Security Cable Slot	22	Line-Out Connector
15	Power Connector		

USFF Motherboard Layout

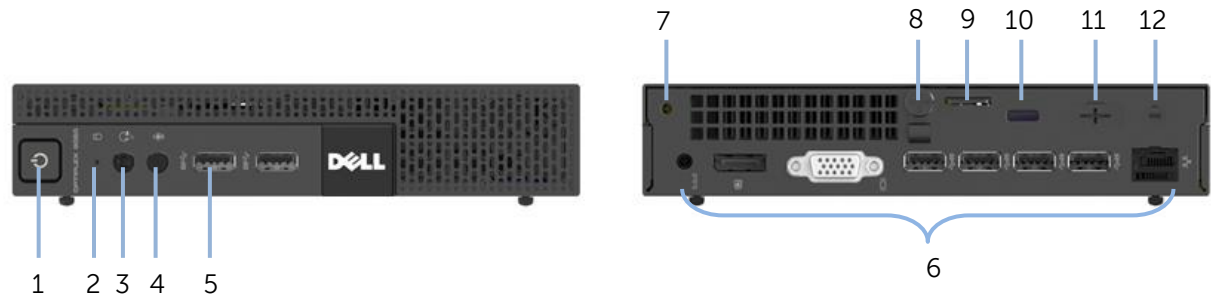




USFF System Board Components

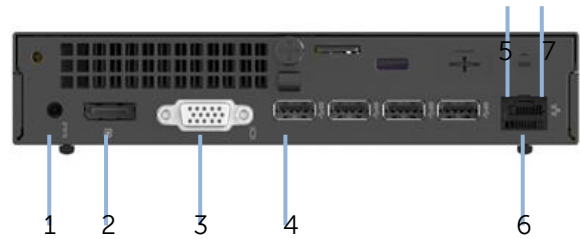
Number	Name	Number	Name
1	PSWD Jumper (PSWD)	12	Intrusion Switch Connector (INTRUDER)
2	System Fan Connector (FAN_SYS)	13	PCH chip (N/A)
3	SERVICE_MODE Jumper (SERVICE_MODE)	14	Buzzer (BEEP)
4	RTCRST Jumper (RTCRST)	15	Processor Socket (N/A)
5	P1 Power Connector (POWER)	16	Battery Connector (BATTERY)
6	SATA 0 Connector (Blue color)	17	PCIE_MINICARD_1 Connector (PCIE_MINICARD_1)
7	HDD_ODD_Power Cable Connector (HDD_ODD_POWER)	18	CPU fan Connector (FAN_CPU)
8	PCIE_MINICARD Connector (PCIE_MINICARD)	19	Front Audio Connector (F_AUDIO)
9	Front USB3.0 Connector (USB3_FRONT)	20	Internal Speaker Connector (INT_SPKR)
10	SATA 1 Connector (Black color)	21	Memory Connectors (DIMM1, DIMM2)
11	P2 Power Connector (12V_PWRCONN)	22	Front IO Connector (FRONT_PANEL)

Micro Computer View



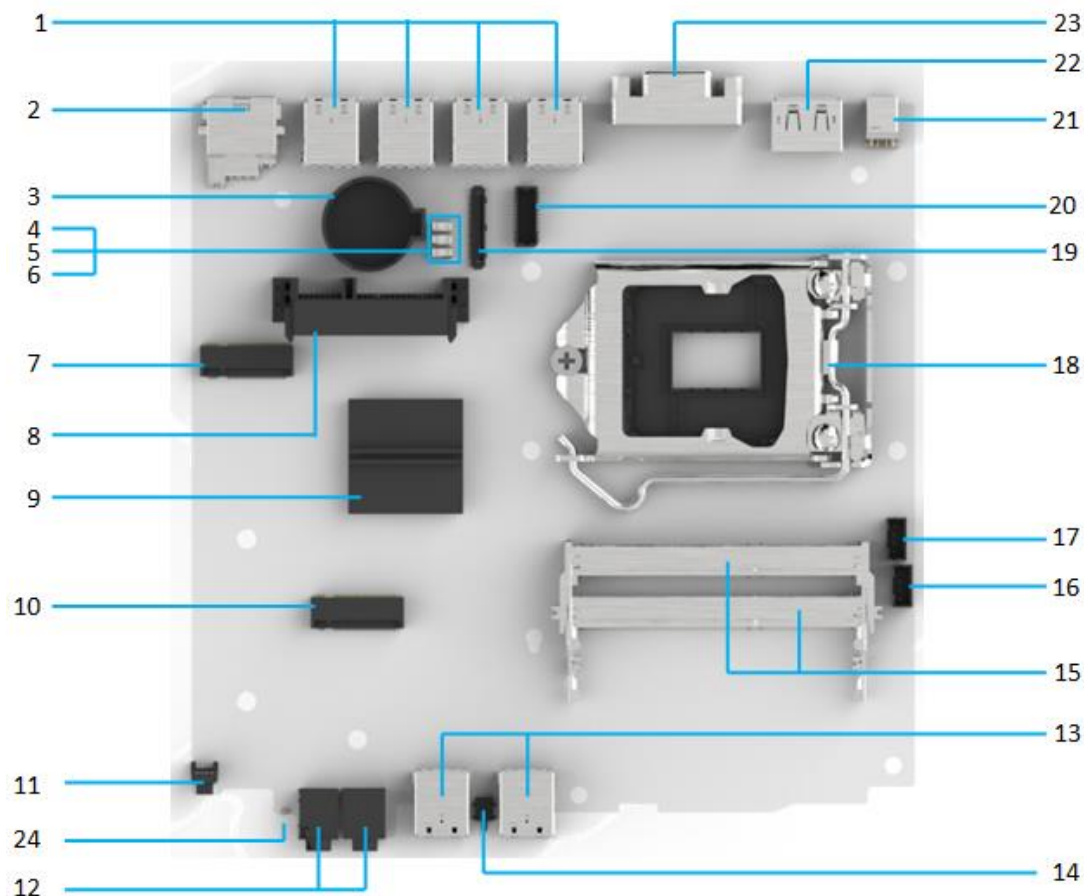
Front View				Rear View			
1	Power Button, Power Light	5	USB3.0 Connectors (2)	8	Thumb Screw	12	Antenna SMA Hole
2	Drive Activity Light	6	Back Panel Connectors	9	Padlock Ring		
3	Headphone Connector	7	Accessory Screw Hole	10	Kensington / Noble Security Cable Slot		
4	Microphone Connector			11	Option IO port		

Rear Panel Connectors			
1	DC-IN Connector	6	Network Connector
2	DisplayPort Connector	7	Network Activity Light
3	VGA Connector		
4	USB3.0 Connectors(4)		
5	Link Integrity Light		



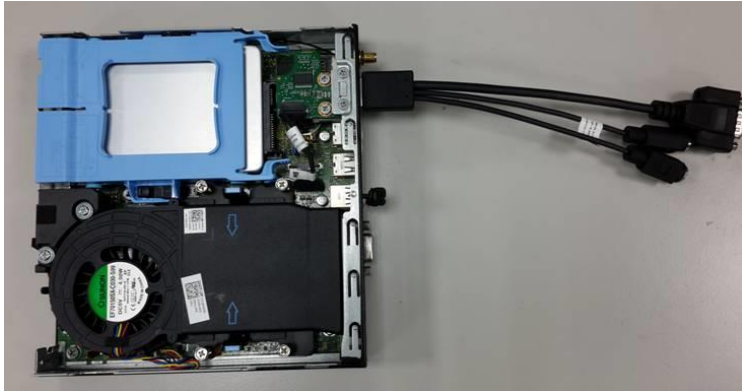
Micro Motherboard Layout





Number	Name	Number	Name
1	Rear USB3.0 connectors (SSUSB1,SSUSB2,SSUSB3,SSUSB4)	13	Front USB3.0 connectors (SSUSB5,SSUSB6)
2	RJ45(NIC)	14	Intrusion Switch (INTRUDER)
3	Battery Connector (Battery)	15	Memory Connectors (DIMM1, DIMM2)
4	RTCRST header (RTCRST)	16	Internal speaker connector(INT_SPKR)
5	Password header (PSWD)	17	CPU fan connector (FAN_CPU)
6	Service Mode header (Service_mode)	18	CPU Socket connector(CPU)
7	PCIE M.2 2280/2242connector(Slot2_M.2)	19	DP/HDMI connector (DP_HDMI)
8	HDD Connector(HDD)	20	PS2 / Serial port connector(KB_MS_SERIAL)
9	PCH chipset(US1)	21	DC IN connector(DC_IN)
10	PCIE M.2 2230 WLAN connector(Slot1_M.2)	22	DP connector(DP)
11	Power switch connector (PWR_SW)	23	VGA connector (VGA)
12	Front Audio Connectors (Audio1,Audio2)		

Optional PS2 / Serial Port



Marketing System Configurations

NOTE: Offerings may vary by country; not all configurations available in all regions. For more information regarding the configuration of your computer, click Start>Help and Support and select the option to view information about your computer.

Operating System

	MT	SFF	USFF	Micro
Windows operating system	Microsoft® Windows 8.1 Professional (64 bit), Microsoft® Windows 8.1 (64bit) Microsoft® Windows 8.1 Single Language (64bit) Microsoft® Windows 7® Home Premium SP1 (32 and 64 bit) Microsoft® Windows 7® Home Premium w/MUI SP1 (32 and 64 bit) Microsoft® Windows 7® Professional w/MUI SP1 (32 and 64 bit) Microsoft® Windows 7® Professional SP1 (32 and 64 bit) Microsoft® Windows 7® Ultimate SP1 (32 and 64 bit)			
Other	Ubuntu 12.04 (64bit)			
OS Media Support (optional)	Optional			

Chipset

	MT	SFF	USFF	Micro
Chipset	Intel Q87 Express Chipset			
Non-volatile memory on chipset				
BIOS Configuration SPI (Serial Peripheral Interface)	64Mbit (8MB) & 32Mbit (4MB) located at SPI_FLASH on chipset			
TPM 1.2 Security Device (Trusted Platform Module) ¹	4KB located at TPM1.2 on chipset			
Non-TPM	Available in select countries			
NIC EEPROM	LOM configuration contained within SPI_FLASH – no dedicated LOM EEPROM			



Processor

NOTE: Global Standard Products (GSP) are a subset of Dell's relationship products that are managed for availability and synchronized transitions on a worldwide basis. They ensure the same platform is available for purchase globally. This allows customers to reduce the number of configurations managed on a worldwide basis, thereby reducing their costs. They also enable companies to implement global IT standards by locking in specific product configurations worldwide. The following GSP processors identified below will be made available to Dell customers.

NOTE: Processor numbers are not a measure of performance. Processor availability subject to change and may vary by region/country.

	MT	SFF	USFF	Micro
Intel® Quad Core Processors				
(Haswell Refresh) Intel® Core™ i7 4785T / 2.2GHz, 8M, VT-x, VT-d, AES-NI, TXT (vPro™), 35W				GSP
(Haswell Refresh) Intel® Core™ i5 4590T / 2.0GHz, 6M, VT-x, VT-d, AES-NI, TXT (vPro™), 35W				GSP
(Haswell Refresh) Intel® Core™ i7-4790 QC/8MB/8T/3.6GHz, 84W	GSP	GSP		
(Haswell Refresh) Intel® Core™ i7-4790S QC/8MB/8T/3.2GHz, 65W			GSP	
(Haswell Refresh) Intel® Core™ i5-4690 QC/6MB/4T/3.5GHz, 84W	GSP	GSP		
(Haswell Refresh) Intel® Core™ i5-4690s QC/6MB/4T/3.2GHz, 65W			GSP	
(Haswell Refresh) Intel® Core™ i5-4590 QC/6MB/4T/3.3GHz, 84W	GSP	GSP		
(Haswell Refresh) Intel® Core™ i5-4590S QC/6MB/4T/3.0GHz, 65W			GSP	
Intel® Dual Core Processors				
(Haswell Refresh) Intel® Core™ i3 4150T / 3.0GHz, 3M, VT-x, AES-NI, 35W				X
(Haswell Refresh) Intel® Pentium Core™ G3240T / 2.7GHz, 3M, VT-x, 35W				X
(Haswell Refresh) Intel® Core™ i3-4150 DC/3MB/4T/3.5GHz/54W a			X	



Memory

NOTE: Memory modules should be installed in pairs of matched memory size, speed, and technology. If the memory modules are not installed in matched pairs, the computer will continue to operate, but with a slight reduction in performance. The entire memory range is available to 64-bit operating systems.

	MT	SFF	USFF	Micro
Type: DDR3 Synch DRAM Non-ECC Memory	1600 MHz			
DIMM Slots	4	4	2	2(So-DIMM)
DIMM Capacities	Up to 8GB	Up to 8GB	Up to 8GB	Up to 8GB
Minimum Memory	2GB	2GB	2GB	2GB
Maximum System Memory	32GB ¹	32GB ¹	16GB ¹	16GB ¹
Memory configurations				
32GB ¹ DDR3, 1600MHz, (4 x 8GB)	X	X		
16GB ¹ DDR3, 1600MHz, (2 x 8 GB)	X	X	X	X
8GB ¹ DDR3, 1600MHz, (2 x 4GB)	X	X	X	X
4GB ¹ DDR3, 1600MHz, (2 x 2GB)	X	X	X	X
4GB ¹ DDR3, 1600MHz, (1 x 4GB)	X	X	X	X
2GB DDR3, 1600MHz, (1 x 2GB)	X	X	X	X
8GB1 DDR3, 1600MHz, (1 x 8GB)	X	X	X	X

¹ The total amount of available memory will be less than 4GB. The amount less depends on the actual system configuration. To fully utilize 4GB or more of memory requires a 64-bit enabled processor and 64-bit operating system.

Drives and Removable Storage

	MT	SFF	USFF	Micro
Bays:				
5.25-inch Optical Bay Supported (External)	2	1	1	0
Optical Drives Supported (maximum)	2	1 (slim-line)	1 (slim-line)	0



Hard Drive Bay Supported (Internal)	2	1	1	1
Hard Drives Supported 3.5"/2.5" (maximum)	2/2	1/2	0/1	0/1
Interface:				
SATA 2.0	2	1	0	0
SATA 3.0	2	2	2	1
M.2 SATA	0	0	0	1
3.5" Hard Drives:				
1TB ¹ SATA3 7200 RPM HDD	X	X		
500GB ¹ SATA3 7200 RPM HDD	X	X		
2.5" Hard Drives				
500GB ¹ SATA3 Secure Encrypted Drive	X	X	X	X
1TB ¹ SATA3 5400 RPM HDD				X
500GB ¹ SATA3 Solid State Hybrid Drive w/8GB Flash (2.5")	X	X		X
2TB ¹ SATA3 5400 RPM HDD				X
320GB ¹ SATA3 7200 RPM HDD	X	X	X	
500GB ¹ SATA3 7200 RPM HDD				X
128GB ¹ SATA3 Solid State Drive	X	X	X	X
256GB ¹ SATA3 Solid State Drive	X	X	X	X
M.2 SSD (available through configuration services only)				
128GB ¹ M.2 Solid State Drive				X
256GB ¹ M.2 Solid State Drive				X
RAID 1 Data Protection: (includes two matching capacity/speed hard drives)				
1TB ¹ SATA 7200 RPM HDD (3.5")	X			
500GB ¹ SATA3 7200 RPM HDD (3.5")	X			
500GB ¹ SATA3 Solid State Hybrid Drive w/8GB Flash (2.5")	X	X		
500GB ¹ SATA3 Secure Encrypted Drive (2.5")	X	X		
320GB ¹ SATA3 7200 RPM HDD (2.5")	X	X		
128GB ¹ SATA3 Solid State Drive (2.5")	X	X		
256GB ¹ SATA3 Solid State Drive (2.5")	X	X		



	MT	SFF	USFF	Micro
RAID 0 Performance: (includes two matching capacity/speed hard drives)				
1TB ¹ SATA 7200 RPM HDD (3.5")	X			
500GB ¹ SATA3 7200 RPM HDD (3.5")	X			
500GB ¹ SATA3 Solid State Hybrid Drive w/8GB Flash (2.5")	X	X		
500GB ¹ SATA3 Secure Encrypted Drive (2.5")	X	X		
320GB ¹ SATA3 7200 RPM HDD (2.5")	X	X		
128GB ¹ SATA3 Solid State Drive (2.5")	X	X		
256GB ¹ SATA3 Solid State Drive (2.5")	X	X		
Optical Drive: (SFF/USFF require slim-line optical drive)				
DVD+/-RW ²	X	X	X	
DVD-ROM ³	X	X	X	
Media Card Reader: (requires slim line optical)				
Dell 19 in 1 Media Card Reader ⁴	X			

¹ For hard drives, GB means 1 billion bytes; actual capacity varies with preloaded material and operating environment and will be less.

² Discs burned with this drive may not be compatible with some existing drives and players; using DVD+R media provides maximum compatibility.

³ DVD-ROM drives may have write-capable hardware that has been disabled via firmware modifications.

⁴ Dell 19 in 1 Media Card Reader (MCR) is supported via a F5 to F3 bay converter on the MT and requires a slim line optical drive.

System Board Connectors

NOTE: See Detailed Engineering Specifications for maximum card dimensions.

	MT	SFF	USFF	Micro
PCI Slot(s) ¹	1			
PCIe x16 Slot(s) ²	1	1		
PCIe x16 (wired x4)Slot(s) ³	1	1		
PCIe x1 Slot(s) ³	1			



Mini PCIe connector(s) ³			1	
Serial ATA (SATA) ⁴	4	3	2	1
M.2 Slot ⁵				2

¹ PCI Slots (Support Standard Rev 2.3)

² PCIe x16 Slots (Support Standard Rev 3.0)

³ PCIe x16 (wired x 4), PCIe x1 Slots, miniPCIe (Support Standard Rev 2.0)

⁴ Serial ATA (2 ports Support Standard Rev 3.0, the rest of ports Support Standard Rev 2.0)

⁵ M.2 SLOT(22x30 card size for WLAN; Dual purpose M.2 slot : SATA interface for 22x80 SATA SSD and PCIe interface for 22x42 for DDP card.

Graphics / Video Controller

NOTE: MT supports full height (FH) cards and SFF supports low profile (LP) cards.

	MT	SFF	USFF	Micro
Intel HD Graphics 4600 [with Core i5/i7 CPU-GPU combo]	Integrated on CPU			
Enhanced Graphic/Video Options				
1GB AMD Radeon HD8490	Optional			
1GB AMD Radeon HD8570	Optional			
1GB nVidia Geforce™ GTX645	Optional			

External Ports / Connectors

NOTE: MT supports full height (FH) cards and SFF supports low profile (LP) cards. See chassis diagrams section for port/connector locations

	MT	SFF	USFF	Micro
USB 2.0 (Front/Rear/Internal)	2/4/2	2/4/0	0/2/0	0/0/0
USB 3.0 (Front/Rear/Internal)	2/2/0	2/2/0	2/2/0	2/4/0
Serial	1 Rear			Optional
Network Connector (RJ-45)	1 Rear			



PS/2	2 Rear		Optional
1394 Controller via optional PCI card	Optional FHcard		
Video:			
VGA	1 Rear		
DisplayPort	2 Rear	1 Rear	
2nd DisplayPort			Optional
HDMI Port			Optional
Audio:			
Line in for microphone	1 Front		
Line in for microphone or stereo	1 Rear		
Line out for headphones or speakers	1 Front, 1 Rear		
Global Headset (GHS) jack			1 Front

Communications – Integrated Intel i217LM

NOTE: MT supports full height (FH) cards and SFF supports low profile (LP) cards.

	MT	SFF	USFF	Micro
Intel® i217 LM Gigabit Ethernet LAN 10/100/1000 (Remote Wake Up, PXE support and Intel Active Management Technology support)	Integrated on system board			
Broadcom NetXtreme 10/100/1000 PCIe Gigabit Networking Card	Optional			

¹ This term does not connote an actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

Communications – Wireless

NOTE: MT supports full height (FH) cards and SFF supports low profile (LP) cards.

	MT	SFF	USFF	Micro
Dell Wireless 1540 PCIe WLAN card (802.11a/b/g/n)	Optional			



Dell Wireless 1540 miniPCIe WLAN card (802.11a/b/g/n)		Optional	
Dell Wireless 7260 M.2 WLAN card (802.11ac)			Optional

Audio and Speakers

	MT	SFF	USFF	Micro
Realtek ALC3220 High Definition Audio Codec	Integrated on system board			
Realtek ALC3234 High Definition Audio Codec				Integrated on System Board
Dell AX210CR USB Stereo speakers	Optional			
Dell 2.0 USB Powered Speaker AX210 (Rolling Stones)				Optional
Dell AX510/AX510PA Flat Panel Soundbar Speakers	Optional			
Dell AX510/ AX510PA E-Series Stereo Sound Bar				Optional
AC411 External Speakers				Optional
AC511 Sound Bar				Optional

Keyboards and Mouse

	MT	SFF	USFF	Micro
Dell Entry Keyboard ¹	Optional			Optional
Dell Entry Keyboard Halogen Free			Optional	Optional
Dell Multimedia Pro Keyboard ¹	Optional			
Dell SmartCard Keyboard ¹	Optional			
Dell USB Optical Mouse ¹	Optional			
Dell USB Optical Mouse Halogen Free			Optional	
Dell Laser Mouse ¹	Optional			
Dell Wireless KB/Mouse Combo ¹	Optional			
Dell PS/2 KB/Mouse ¹	Optional			



¹These offerings are not Halogen Free

Security

	MT	SFF	USFF	Micro
Trusted Platform Module (TPM) 1.2 ¹	Integrated on system board			
Chassis Intrusion Switch	Optional			integrated on system board
Dell Smartcard Keyboard	Optional			
Chassis lock slot and loop support	Standard			
Dell HW Crypto Accelerator (aka GPE)				Optional

¹TPM is not available in all countries. Depending on your country regulations, no-TPM system boards may be available.

Software

	MT	SFF	USFF	Micro
Dell Client Manager	Available via Dell.com			
Dell Data Protection Security Tools (DDP ST)	Standard			
Dell Data Protection Encryption (DDPE)	Optional			

Environmental

NOTE: For more details on Dell Environmental features, please to go to Environmental Attributes section. See your specific region for availability.

	MT	SFF	USFF	Micro
Recyclable packaging	X	X	X	X
BFR/PVC—free chassis			X	X
MultiPack packaging	Optional, US only			
Energy Efficient Power Supply	Optional		Standard	Standard

Service and Support

NOTE: For more details on Dell Service Plans please to go to: www.dell.com/service/service_plans



	MT	SFF	USFF	Micro
1 Year Warranty ¹ Next Business Day On-site ² (1-1-1)	Standard in some regions			
3 Year Warranty ¹ Next Business Day On-site ² (3-3-3)	Standard in some regions			
ProSupport	Optional			

1 For a copy of our guarantees or limited warranties, please write Dell USA L.P., Attn: Warranties, One Dell Way, Round Rock, TX 78682. For more information, visit www.dell.com/warranty.

2 Service may be provided by third-party. Technician will be dispatched if necessary following phone-based troubleshooting. Subject to parts availability, geographical restrictions and terms of service contract. Service timing dependent upon time of day call placed to Dell. U.S. only.

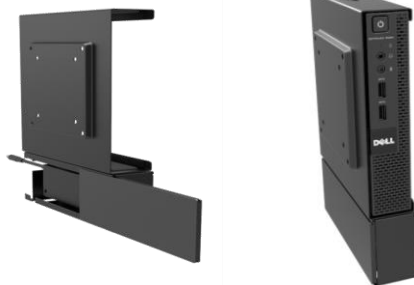
Mounting Options (9020 Micro only)

Product
Dell OptiPlex Micro Vertical Stand
Dell OptiPlex Micro VESA Mount
Dell OptiPlex Micro Dual VESA Mount
Dell OptiPlex Micro Behind Monitor Mount
Dell OptiPlex Micro Console Enclosure with internal DVD-RW

Dell OptiPlex Micro Vertical Stand



Dell OptiPlex Micro VESA Mount



Dell OptiPlex Micro Dual VESA Mount



Dell OptiPlex Micro Behind Monitor Mount



Dell OptiPlex Micro Console Enclosure with internal DVD-RW



Detailed Engineering Specifications

System Dimensions (Physical)

NOTE: System Weight and Shipping Weight is based on a typical configuration and may vary based on PC configuration. A typical configuration includes: integrated graphics, one hard drive, one optical drive.

	MT	SFF	USFF	Micro
Chassis Volume (liters)	26.27	8.38	3.70	1.16
Chassis Weight (pounds / kilograms)	16.98 / 7.7	11.03 / 5	7.72 / 3.5	2.82 / 1.28
Chassis Dimensions (H x W x D)				
Height (inches / centimeters)	14.17 / 36	11.42 / 29	9.32 / 23.67	7.2 / 18.2
Width (inches / centimeters)	6.89 / 17.5	3.65 / 9.26	2.56 / 6.5	1.4 / 3.6
Depth (inches / centimeters)	16.42 / 41.7	12.28/31.2	9.44 / 24	7 / 17.6
Shipping Weight (pounds / kilograms – includes packaging materials)	22.41 / 10.17	14.3 / 6.49	10.9 / 4.575	7.3 / 3.3
Packaging Parameters (H x W x D)				
Height (inches / centimeters)	21.31/54.13	19.25/48.90	19.13/48.59	5.2 / 13.3
Width (inches / centimeters)	18.75/47.63	15.81/40.16	14.38/36.53	9.4 / 23.8
Depth (inches / centimeters)	14.09 / 35.79	10.19/25.88	9.63/24.46	19.6 / 49.8

Micro Mounting Dimensions (Physical)

	Dell OptiPlex Micro Vertical Stand	Dell OptiPlex Micro VESA Mount	Dell OptiPlex Micro Dual VESA Mount	Dell OptiPlex Micro All in One Mount	Dell OptiPlex Micro Console with DVD-RW
Volume (liters)	0.23L	1.6L	1.9L	4.88L	4.3L
Weight (pounds / kilograms)	0.104 / 0.047	1.358 / 0.616	2.624/1.19	3.57/1.62	3.95 / 1.79
Dimensions (H x W x D)					
Height (inches / centimeters)	6.61/16.8	7.47 / 18.99	7.52 / 19.12	12.3/31.26	2.52 / 6.41
Width (inches /	0.69/ 1.75	1.93 / 4.92	2.35 / 5.97	2.20/5.59	9.64 / 24.5



centimeters)					
Depth (inches / centimeters)	3.07/ 7.8	6.75 / 17.17	6.77 / 17.22	11.00/27.95	11.02 / 28.0
Shipping Weight (pounds / kilograms – includes packaging materials)	0.69	0.69	1.29	2.01	2.07
Packaging Parameters (H x W x D)					
Height (inches / centimeters)	8.54/21.7	8.54/21.7	10.86/27.6	15/38.1	13.38/34
Width (inches / centimeters)	7.87/20	7.87/20	8.03/20.4	6.30/16	5.11/13
Depth (inches / centimeters)	2.52/6.4	2.52/6.4	2.72/6.9	15.27/38.8	14.13/35.9

System Board Connector Maximum Add-in Card Allowable Dimensions

	MT	SFF	USFF	Micro
PCI Slot (Voltage supported 3.3V/5V/12V/-12V)	1			
Height (inches / centimeters)	4.376 / 11.115			
Length (inches / centimeters)	6.6 / 16.765			
Maximum Wattage	25W			
PClex16 Slot (BLUE) (Voltage supported 3.3V/12V)	1	1		
Height (inches / centimeters)	4.376 / 11.115	2.731 / 6.89		
Length (inches / centimeters)	6.6 / 16.765	6.6 / 16.765		
Maximum Wattage	75W	35W		
PClex16 wired as x4 Slot (BLACK) (Voltage supported 3.3/12V)	1	1		
Height (inches / centimeters)	4.376 / 11.115	2.731 / 6.89		
Length (inches / centimeters)	6.6 / 16.765	6.6 / 16.765		
Maximum Wattage	25W	25W		
PCIe x1 Slot (Voltage supported 3.3V/12V)	1			
Height (inches / centimeters)	4.376 / 11.115			



Length (inches / centimeters)	4.5 / 11.44			
Maximum Wattage	10W			
Mini PCIe x1 Slot			1	
Height (inches / centimeters)			1.18/3	
Length (inches / centimeters)			2/5.095	
Maximum Wattage			4.2W	

System Level Environmental and Operating Conditions

	MT	SFF	USFF	Micro
Temperature				
Operating	5° to 35° C (41° to 95° F)			5° to 35°C (41° to 95°F)
Non-Operating (Storage)	-40° to 65° C (-40° to 149° F)			-40° to 65° C (-40° to 149°F)
Relative Humidity	20% to 80% (non-condensing)			20% to 80% (non-condensing)
Maximum Vibration				
Operating	0.26Grms random at 5 to 350 Hz			0.26Grms random at 5 to 350 Hz
Non-Operating	2.2 Grms random at 5 to 500 Hz			1.37Grms random at 5 to 500 Hz
Maximum Shock				
Operating	Bottom half-sine pulse with a change in velocity of 50.8 cm/sec (20 inches/sec)			Bottom half-sine pulse with a change in velocity of 50.8 cm/sec (20 inches/sec)
Non-Operating	105G half-sine pulse with a change in velocity of 133cm/sec (52.5inches/sec)			105G half-sine pulse with a change in velocity of 133cm/sec (52.5inches/sec)
Maximum Altitude				
Operating	-15.2 to 3048 m (-50 to 10,000 ft)			-15.2 to 3048 m (-50 to 10,000 ft)
Non-Operating	-15.2 to 10,668 m (-50 to 35,000 ft)			-15.2 to 10,668 m (-50 to 35,000 ft)

POWER

NOTE: These form factors utilize a more efficient Active Power Factor Correction (APFC) power supply. Dell recommends only Universal Power Supplies (UPS) based on Sine Wave output for APFC PSUs, not an approximation of a Sine Wave, Square Wave, or quasi-Square Wave. If you have questions, please contact the manufacturer to confirm the output type.

	MT			SFF			USFF	Micro
Power	APFC	EPA	EPA	APFC	EPA	EPA	EPA	EPS Level V



Supply		Gold	Bronze		Gold	Bronze		
Wattage	290W			255W			200W High Efficiency	65W
AC input voltage range	90-264			90-264			90 – 264	90-264
AC input current (low ac range / high ac range)	5.4/2.7			4.6/2.3			2.9/1.45	2.1
AC input frequency	47-63			47-63			47-63	47-63
AC holdup time (80% load)	16mS			16mS			16mS	NA
Average efficiency (ESTAR 5.2 compliant)		87 – 90 – 87% @ 20 – 50 – 100% load	82 – 85 – 82% @ 20 – 50 – 100% load		87 – 90 – 87% @ 20 – 50 – 100% load	82 – 85 – 82% @ 20 – 50 – 100% load	87 – 90 – 87% @ 20 – 50 – 100% load	87%
Typical Efficiency (APFC)	65%			65%				
DC Parameters								
+12.0v output	12VA/14A 12VB/16A			12VA/14A 12VB/13A			12VA/10.5A; 12VB/10.4A Note: +12VB Rated at 0.4A when in Standby Mode.	
+19.5v output								19.5V/3.34A
-12.0v output							0.1A	
+12.0v auxiliary output	1.67A			1.67A			0.4A	
Max total power	290W			255W			200W	65W
Max	290W			255W			200W	



combined 12.0v power (note: only if more than one 12v rail)								
BTUs/h (based on PSU max wattage)	989 BTU			870 BTU			682 BTU	
Power Supply Fan	80*25			60*25				
Compliance								
ErP Lot6 Tier 2 0.5watt requirement	Yes	Yes		Yes	Yes		Yes	
80Plus Certified	No	Yes		No	Yes		Yes	No
FEMP Standby Power Compliant	Yes	Yes		Yes	Yes		Yes	No
3.0v CMOS battery (Type and estimated battery life)								
Brand	Type	Voltage	Composition	Life				
JHIH HONG	CR2032	3V	Lithium	Continuous Discharge Under 15 kΩLoad to 2.5V End-Voltage. 20°C±2°C: 940Hrs or longer; 910Hrs or longer after 12 months				
PANASONIC	CR2032	3V	Lithium	Continuous Discharge Under 15 kΩLoad to 2.5V End-Voltage. 20°C±2°C1183Hrs. or Longer.1133Hrs.or Longer after 12 months.				
MITSUBISHI	CR2032	3V	Lithium	Continuous Discharge Under 15 kΩLoad to 2.0V End-Voltage. 20°C±2°C940Hrs. or Longer.910Hrs.or Longer after 12 months.				
SHUNWO	CR2032	3V	Lithium	Continuous Discharge Under 15 kΩLoad to 2.5V End-Voltage. 20°C±2°C.1183Hrs. or Longer.1133Hrs.or Longer after 12 months.				



Audio

	MT	SFF	USFF	Micro
Integrated Realtek ALC3220 High Definition Audio	X			
Realtek ALC3234 High Definition Audio Codec				X
High Definition Stereo Support	X			X
Number of channels	2			2
Number of Bits / Audio resolution	16, 20 and 24-bit resolution			16, 24-bit resolution
Sampling rate (recording / playback)	Support 44.1K/48K/96K/192 kHz sample rates			Support 44.1K/48K/96K/192 kHz sample rates Support 44.1K/48K/96K/192 kHz sample rates
Signal to Noise Ratio	98 dB DAC outputs,90 dB for ADC inputs			95 dB DAC outputs, 88dB for ADC inputs
Analog Audio	X			X
Dolby Digital				N/A
THX				N/A
Digital out (S/PDIF)				N/A
Audio Jack Impedance				
Microphone	40K ohm~60K ohm			40K ohm~60K ohm
Line-in	40K ohm~60K ohm			40K ohm~60K ohm
Line-out	100~150 ohm			100~150 ohm
Headphone	1~4 ohm			1~4 ohm
Internal Speaker Power Rating	2Watt (peak) / 1Watt (average)			2.6Watt (peak) 4 Ohm / 2Watt (average) 4Ohm

Communications – Integrated Intel I217

INTEGRATED INTEL® I217 GIGABIT1 ETHERNET LAN 10/100/1000	MT	SFF	USFF	Micro
External Connector Type	RJ45			RJ45
Data Rates Supported	10/100/1000 Mbps			10/100/1000 Mbps¹
Controller Details				
Controller Bus	PCIe-based interface for S0 state, SMBus for Sx low			PCI Express Base



Architecture	power state	Specification Revision 1.1
Integrated Memory		Yes
Data Transfer Mode (example: Bus-Master DMA)		Yes
Power Consumption (full operation per data rate connection speed)	535mW (Max)	535mW (Max.)
Power Consumption (standby operation)	176mW (Max)	45mW (Max.)
IEEE Standards Compliance	802.3	802.3
Hardware Certifications	n/a	N/A
Boot ROM Support	EEPROM (located in SPI)	N/A
Network Transfer Mode		
Network Transfer Rate 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps	10 Mb (full/half-duplex) 100 Mb (full/half-duplex) 1000 Mb (full-duplex)	10 Mb (full/half-duplex) 100 Mb (full/half-duplex) 1000 Mb (full-duplex)
Environmental		
Operating Temperature	0° C to 85° C (32° F to 185° F)	0° C to 70° C
Operating Humidity	20% to 80% (non-condensing)	IC level 40~60% RH PCB level 0~90% RH
Operating System Driver Support	Windows 8.1 64, Windows 8 32/64, Windows 7 32/64	Windows 7 32/64, Windows 8.1 /64 Ubuntu
Manageability	WOL, PXE 2.1	WOL, PXE 2.1
Management Capabilities Alerting	Intel® Standard Manageability, Intel Core 2 Duo/Quad Processor with vPro Technology	N/A

1 This term does not connote an actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

Communications – Network Adapter

Broadcom NetXtreme 10/100/1000 PCIe Gigabit1 Networking	MT	SFF	USFF	Micro
---	----	-----	------	-------



Card			
External Connector Type	RJ45		N/A
Data Rates Supported	10/100/1000 Mbps Half/Full duplex		N/A
Controller Details			
Controller Bus Architecture	PCIe c1.0a x1		N/A
Integrated Memory	64KBytes RX, 8KBytes TX		N/A
Data Transfer Mode (example: Bus-Master DMA)	Bus-Master DMA		N/A
Power Consumption (full operation per data rate connection speed)	2.84W (860mA @ +3.3V)		N/A
Power Consumption (standby operation)	Less than 300mW		N/A
IEEE Standards Compliance	802.3, 802.2, 802.3x, 802.1p		N/A
Hardware Certifications	FCC B, VCCI B, CE		N/A
Boot ROM Support	No		N/A
Network Transfer Mode			
Network Transfer Rate (example 10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps)	10BASE-T (full-duplex) 20 Mbps Max* 100BASE-TX (half-duplex) 100 Mbps Max* 100BASE-TX (full-duplex) 200 MbpsMax* 1000BASE-T (full-duplex) 2000 Mbps Max* * Depends on the system environment.		N/A
Environmental			
Operating Temperature	0° C to 55° C (32° F - 131° F)		N/A
Operating Humidity	5% ~ 95% (non-condensing)		N/A
Operating System Driver Support	Windows 7 32/64, Windows 8 32/64, Linux		N/A
Manageability	WOL, PXE2.1, ACPI		N/A
Management Capabilities Alerting	N/A		N/A

¹ This term does not connote an actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

1394 Firewire PCI Add-in Card

	MT
Connector Type	IEEE1284-1394a-2000 (6 pins)



Controller Details	
Controller Bus Architecture	PCI 2.3
Chipset	LSI
IO Ports	IEEE 1394 (FireWire) with a transfer rate of up to 400 Mbps
Power consumption	Under 30 mA
Connector	2 IEEE-1394a 6 pins connectors
OS Support	Windows 7 and Windows 8

Communications – Wireless 1540 WLAN CARD (802.11n)

	MT	SFF	USFF
Dell Wireless 1540 PCIe WLAN card (802.11n)	Custom WLAN Antenna Connector		
Dell Wireless 1540 half mini PCIe WLAN card (802.11n)			Custom WLAN Antenna Connector
Controller Details			
Controller Bus Architecture	Electrically compatible with the PCI Express Base Specification v1.1 (x1 lane)		
WLAN standards supported	802.11a, 802.11b, 802.11g, 802.11n		
802.11b Data Rates supported	11, 5.5, 2, 1 Mbps		
802.11a Data Rates supported	54, 48, 36, 24, 18, 12, 9, 6 Mbps		
802.11g Data Rates supported	54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1 Mbps		
802.11n Data Rates supported	270, 240, 180, 135, 130, 121.5, 120, 117, 108, 104, 90, 81, 78, 65, 60, 58.5, 54, 52, 40.5, 39, 30, 27, 26, 19.5, 13.5, 13, 6.5 Mbps		
Encryption	WAP, WAP2, AES, TKIP		
Operating Temperature	0° C to 55° C (32° F - 131° F)		
Operating Humidity	5% ~ 95% (non-condensing)		
Operating System Driver Support	Windows 8.1 64, Windows 8 64, Windows 7 32/64		

Communications – Wireless 7260AC Micro

Intel Wireless 7260AC(802.11ac)	Micro
Connector Type	Custom WLAN Antenna Connector
Controller Bus Architecture	Electrically compatible with the PCI Express Base Specification v1.1 (x1 lane) and PCIe v1.0a.
WLAN Standards Supported	802.11a, 802.11b, 802.11g, 802.11n
802.11a Data Rates Supported	11, 5.5, 2, 1 Mbps
802.11b Data Rates Supported	54, 48, 36, 24, 18, 12, 9, 6 Mbps
802.11g Data Rates Supported	54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1 Mbps
802.11n Data Rates Supported	270, 240, 180, 135, 130, 121.5, 120, 117, 108, 104, 90, 81, 78, 65, 60, 58.5, 54, 52, 40.5, 39, 30, 27, 26, 19.5, 13.5, 13, 6.5 Mbps
Encryption	WEP 64-bit and 128-bit, TKIP, AES-CCMP 128-bit
Operating Temperature	0 °C – 80 °C



Operating Humidity	N/A
Operating System Driver Support	Windows 8.164 Windows 7 32/64,

Communications – Serial/Parallel Port PCIe ADD-In Card

Serial / Parallel Port PCIe Add-in Card	MT
Connector Type	RS-232 and IEEE1284
Data Rates Supported	50bps ~115.2Kbps(Serial)&Maximum 1.8MBp(Parallel)
Controller Details	
Controller	SUNIX SUN2212 (16C950 UART Compatible)
Controller Bus Architecture	PCI Express Spec 2.0, Single-Lane (x1)
Driver Support	Microsoft Client XP/Vista/7/8 (X86/X64) Microsoft Server 2000/2003/2008/2008 R2 (X86/X64) Linux 2.4.x/2.6.x/3.x DOS
Full height Serial/Parallel add in dongle	Optional
Environmental	
Operating Temperature	0 to 60°C (32 to 140°F)
Operating Humidity	5 to 95% RH
Storage Temperature	-20 to 85°C (-4 to 185°F)

Communications – Serial Port PCIe Add-In Card

Note: MT supports full height (FH) cards and SFF supports low profile (LP) cards

Serial / Parallel Port PCIe Add-in Card	SFF
Connector Type	RS-232
Data Rates Supported	50bps ~115.2Kbps
Controller Details	
Controller	SUNIX SUN2212 (16C950 UART Compatible)
Controller Bus Architecture	PCI Express Spec 2.0, Single-Lane (x1)
Driver Support	Microsoft Client XP/Vista/7/8 (X86/X64) Microsoft Server 2000/2003/2008/2008 R2 (X86/X64) Microsoft Embedded XP Embedded/POS Ready 2009/ Embedded System Linux 2.4.x/2.6.x/3.x DOS
Full height Serial/Parallel add in dongle	Optional
Environmental	
Operating Temperature	0 to 60°C (32 to 140°F)
Operating Humidity	5 to 95% RH
Storage Temperature	-20 to 85°C (-4 to 185°F)



Serial / Parallel Port PCIe Add-in Card	SFF
Connector Type	IEEE1284
Data Rates Supported	Maximum 1.8MBp
Controller Details	
Controller	SUNIX SUN2212
Controller Bus Architecture	PCI Express Spec 2.0, Single-Lane (x1)
Driver Support	Microsoft Client XP/Vista/7/8 (X86/X64) Microsoft Server 2000/2003/2008/2008 R2 (X86/X64) Linux 2.4.x/2.6.x/3.x DOS
Full height Serial/Parallel add in dongle	Optional
Environmental	
Operating Temperature	0 to 60°C (32 to 140°F)
Operating Humidity	5 to 95% RH
Storage Temperature	-20 to 85°C (-4 to 185°F)



Graphics / Video Controller

NOTE: MT supports full height (FH) cards and SFF supports low profile (LP) cards.

Onboard Graphics

Onboard Graphics	MT	SFF	USFF	Micro
Bus Type	Integrated			Integrated
GPU core clock	Depends on CPU type (Intel® HD Graphics@1100Mhz /HD Graphics 4600 @ 1150MHz)			Depends on CPU type (Intel®HDGraphics@1100Mhz/HD Graphics 4600 @ 1150MHz)
Frame Buffer Memory (onboard and shared) Size and Speed	Depends on available system memory (Up to 1.7GB with 4GB system Memory)			Depends on available system memory (Up to 1.7GB with 4GB system Memory)
Overlay Planes	Yes			Yes
Maximum Color Depth	32bit			32bit
Maximum Vertical Refresh Rate	75Hz			75Hz
Multiple Display Support	Yes			Yes
Operating System Graphics / API Support	OpenGL 4.0/DirectX 11.1/OpenCL 1.2			OpenGL 4.0/DirectX 11.1/OpenCL 1.2
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Up to 3840x2160 @ 60Hz (DP) Up to 2560x1600 @ 60Hz (HDMI) Up to 4096x2304 @ 24Hz (HDMI) Up to 1920x1200 @ 60Hz (DVI&VGA)			Up to 1920*1200 @ 60Hz(DP) Up to 1920*1200 @ 60Hz(HDMI) 1920*1200 @ 60Hz(DVI) 1920*1080 @ 60Hz(VGI)
External Connectors	VGA, DisplayPort			VGA, Display Port, Optional 2nd DP/HDMI
DisplayPort				
Bus Type	DDPC			DDPC
Maximum Supported Resolution	Up to 3840x2160 @ 60Hz			Up to 3840x2160 @ 60Hz
Maximum Power Consumption	N/A			N/A
External Connectors	DisplayPort			DisplayPort, HDMI

1GB AMD RADEON HD8490

1GB AMD RADEON	MT	SFF	USFF	Micro
----------------	----	-----	------	-------



HD8490				
Bus Type	PCIEx16			
GPU core clock	875Mhz			
Frame Buffer Memory (onboard and shared) Size and Speed	1GB/900Mhz			
Maximum Power Consumption	35W			
Overlay Planes	Yes			
Maximum Color Depth	32-bits			
Maximum Vertical Refresh Rate	60Hz (2560x1600)			
Multiple Display Support	Yes			
Operating System Graphics / API Support	D3D / OpenGL4.1 / OpenCLv1.1 / DirectX11			
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Dual-Link DVI: 2560 x 1600, 60Hz DisplayPort: 2560 x 1600, 60Hz VGA: 1920 x 1440, 60Hz			
External Connectors	DisplayPort, DVI-I			
Dimensions of Full Height Card inches/centimeters (L x H)	6.6 x 4.7 / 16.764 x 12.0			
Dimensions of Low Profile Card inches/centimeters (L x H)		6.6 x 3.35 / 16.764 x 8.5		
Environmental Operating Conditions (Non-Condensing)				
Operating Temperature Range	10°-50° C			
Relative Humidity Range	5-90% RH			
Altitude Range	0-20,000 ft.			



1GB AMD RADEON HD8570

1GB AMD RADEON HD8570	MT	SFF	USFF	Micro
Bus Type	PCIE x16			
GPU core clock	780Mhz			
Frame Buffer Memory (onboard and shared) Size and Speed	1GB/900Mhz			
Maximum Power Consumption	50W			
Overlay Planes	Yes			
Maximum Color Depth	24-bits			
Maximum Vertical Refresh Rate	60Hz (4096x2160)			
Multiple Display Support	Yes			
Operating System Graphics / API Support	D3D / OpenGL4.1 / OpenCLv1.1 / DirectX11			
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Single-Link DVI: 1920 x 1200, 60Hz DisplayPort1.2: 4096 x 2160, 60Hz(Single Stream) VGA: 1920 x 1440, 60Hz			
External Connectors	DisplayPort, DVI-I			
Dimensions of Full Height Card inches/centimeters (L x H)	6.6 x 4.7 / 16.764 x 12.0			
Dimensions of Low Profile Card inches/centimeters (L x H)		6.6 x 3.35 / 16.764 x 8.5		
Environmental Operating Conditions (Non-Condensing)				
Operating Temperature Range	10°-50° C			
Relative Humidity Range	5-90% RH			
Altitude Range	0-20,000 ft.			

1GB NVIDIA GEFORCE

	MT
Bus Type	PCIE x16
GPU core clock	823Mhz
Frame Buffer Memory (onboard and shared) Size and Speed	1GB/2000Mhz GDDR5
Maximum Power Consumption	52.5W
Overlay Planes	Yes
Maximum Color Depth	24-bits
Maximum Vertical Refresh Rate	60Hz (2560X1600)



Multiple Display Support	Yes
Operating System Graphics / API Support	D3D / OpenGL4.1 / DirectX11
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Dual-Link DVI: 2560 x 1600, 60Hz DisplayPort: 2560 x 1600, 60Hz HDMI: 1920 x 1080, 120Hz
External Connectors	DisplayPort, DVI-I, HDMI
Dimensions of Full Height Card inches/centimeters (L x H)	6.6 x 4.7 / 16.764 x 12.0
Environmental Operating Conditions (Non-Condensing)	
Operating Temperature Range	10°-50° C
Relative Humidity Range	5-90% RH
Altitude Range	0-20,000 ft.

Hard Drives

3.5" 1TB SATA3 7200 RPM HDD

3.5" 1TB SATA3 7200 RPM HDD	MT	SFF	USFF	Micro
Capacity (bytes)	1,000,204,886,016			
Dimensions inches (W x D x H)	5.87 x 4 x 1			
Interface type and Maximum speed	Up to 6Gb/s (SATA 3.0)			
Internal buffer size	64 MB			
Average Seek Time	13ms			
Rotational Speed	7200 rpm			
Logical Blocks	1,953,525,168			
Power Source				
Power Consumption (reference only)	Idle 5.0W, Active 10.0W(running IOmeter utility)			
Spin Up Current (reference only)	5V (1A) ,12V (2A)			
Environmental Operating Conditions (Non-Condensing)				
Temperature Range	5°C to 60°C			
Relative Humidity Range	10% to 90% non-condensing			
Maximum Dew Point Temperature	Operating: 26°C Non-Operating: 33° C			
Altitude Range	-1000 ft to 10000 ft			
Environmental Non-Operating Conditions (Non-Condensing):				
Temperature Range	-40°C to 65°C			
Relative Humidity Range	5% to 95% non-condensing			
Maximum Wet Bulb Temperature	33°C			
Altitude Range	-1000 ft to 40000 ft			



3.5" 500GB SATA3 7200 RPM HDD

3.5" 500GB SATA3 7200 RPM HDD	MT	SFF	USFF	Micro
Capacity (bytes)	500,107,862,016			
Dimensions inches (W x D x H)	5.87 x 4 x 1			
Interface type and Maximum speed	Up to 6Gb/s (SATA 3.0)			
Internal buffer size	64 MB			
Average Seek Time	13ms			
Rotational Speed	7200 rpm			
Logical Blocks	976,773,168			
Power Source				
Power Consumption (reference only)	Idle 5.0W, Active 10.0W(running IOmeter utility)			
Spin Up Current (reference only)	5V (1A) ,12V (2A)			
Environmental Operating Conditions (Non-Condensing)				
Temperature Range	5°C to 60°C			
Relative Humidity Range	10% to 90% non-condensing			
Maximum Dew Point Temperature	Operating: 26°C Non-Operating: 33° C			
Altitude Range	-1000 ft to 10000 ft			
Environmental Non-Operating Conditions (Non-Condensing):				
Temperature Range	-40°C to 65°C			
Relative Humidity Range	5% to 95% non-condensing			
Maximum Wet Bulb Temperature	33°C			
Altitude Range	-1000 ft to 40000 ft			

2.5" 500GB SATA 7200 RPM HDD

2.5" 500GB SATA 5400 RPM SECURE ENCRYPTED DRIVE	MT	SFF	USFF	Micro
Capacity (bytes)	500,107,862,016			
Dimensions inches (W x D x H)	Approximately (3.93 x 2.75 x 0.374 inches)			
Interface type and Maximum speed	Up to 6Gb/s(SATA 3.0)			
Internal buffer size	32 MB			
Average Seek Time	12 ms (Read)			
Rotational Speed	7200 rpm			
Logical Blocks	976,773,168			
Power Source				
Power Consumption (reference only)	Idle 0.7W, Active 3.25W			



Spin Up Current (reference only)	5V (1A)
Environmental Operating Conditions (Non-Condensing)	
Temperature Range	5°C to 60°C
Relative Humidity Range	10% to 90% non-condensing
Maximum Dew Point Temperature	Operating: 26°C Non-Operating: 33° C
Altitude Range	-1000 ft to 10000 ft
Environmental Non-Operating Conditions (Non-Condensing):	
Temperature Range	-40°C to 65°C
Relative Humidity Range	5% to 95% non-condensing
Maximum Wet Bulb Temperature	33°C
Altitude Range	-1000 ft to 40000 ft

2.5" 500GB SATA3 5400 RPM HYBRID HDD W/8GB FLASH

2.5" 500GB SATA3 5400 RPM HYBRID HDD W/8GB FLASH	MT	SFF	USFF	Micro
Capacity (bytes)	500,107,862,016			
Cache	Dynamic			
Dimensions inches (W x D x H)	Approximately (2.75 x 3.951 x 0.268 inches)			
Interface type and Maximum speed	Up to 6Gb/s (SATA 3.0)			
Internal buffer size	64MB			
Average Seek Time	12 ms			
Rotational Speed	5400 rpm			
Logical Blocks	976,773,168			
Power Source				
Power Consumption (reference only)	Idle 0.7W, Active 3.25W			
Spin Up Current (reference only)	5V (1A)			
Environmental Operating Conditions (Non-Condensing)				
Temperature Range	5°C to 60°C			
Relative Humidity Range	10% to 90% non-condensing			
Maximum Dew Point Temperature	Operating: 26°C Non-Operating: 33° C			
Altitude Range	-1000 ft to 10000 ft			
Environmental Non-Operating Conditions (Non-Condensing):				
Temperature Range	-40°C to 65°C			
Relative Humidity Range	5% to 95% non-condensing			



Maximum Wet Bulb Temperature	40°C
Altitude Range	-1000 ft to 40000 ft

2.5" 500GB SATA 5400 RPM SECURE ENCRYPTED DRIVE

2.5" 500GB SATA 5400 RPM SECURE ENCRYPTED DRIVE	MT	SFF	USFF	Micro
Capacity (bytes)	500,107,862,016			
Dimensions inches (W x D x H)	Approximately (3.93 x 2.75 x 0.374 inches)			
Interface type and Maximum speed	Up to 3Gb/s			
Internal buffer size	16 MB			
Average Seek Time	15 ms (Read)			
Rotational Speed	5400 rpm			
Logical Blocks	976,773,168			
Power Source				
Power Consumption (reference only)	Idle 0.7W, Active 3.25W			
Spin Up Current (reference only)	5V (1A)			
Environmental Operating Conditions (Non-Condensing)				
Temperature Range	5°C to 60°C			
Relative Humidity Range	10% to 90% non-condensing			
Maximum Dew Point Temperature	Operating: 26°C Non-Operating: 33° C			
Altitude Range	-1000 ft to 10000 ft			
Environmental Non-Operating Conditions (Non-Condensing):				
Temperature Range	-40°C to 65°C			
Relative Humidity Range	5% to 95% non-condensing			
Maximum Wet Bulb Temperature	33°C			
Altitude Range	-1000 ft to 40000 ft			

2.5" 1TB SATA3 5400 RPM HDD

2.5" 1TB SATA3 5400 RPM HDD	MT	SFF	USFF	Micro
Capacity (bytes)	1,000,204,886,016			1,000,204,886,016
Dimensions inches (W x D x H)	Approximately (2.75 x 3.951 x 0.268 inches)			Approximately (2.75 x 3.951 x 0.268 inches)
Interface type and Maximum speed	Up to 6Gb/s (SATA 3.0)			Up to 6Gb/s (SATA 3.0)



Internal buffer size	16 MB		16 MB
Average Seek Time	12ms(Read)		12ms(Read)
Rotational Speed	5400 rpm		5400 rpm
Logical Blocks	1,953,525,168		1,953,525,168
Power Source			
Power Consumption (reference only)	Idle 0.7W, Active 3.25W		Idle 0.7W, Active 3.25W
Spin Up Current (reference only)	5V (1A)		5V (1A)
Environmental Operating Conditions (Non-Condensing)			
Temperature Range	5°C to 60°C		5°C to 60°C
Relative Humidity Range	10% to 90% non-condensing		10% to 90% non-condensing
Maximum Dew Point Temperature	Operating: 26°C Non-Operating: 33° C		Operating: 26°C Non-Operating: 33° C
Altitude Range	-1000 ft to 10000 ft		-1000 ft to 10000 ft
Environmental Non-Operating Conditions (Non-Condensing):			
Temperature Range	-40°C to 65°C		-40°C to 65°C
Relative Humidity Range	5% to 95% non-condensing		5% to 95% non-condensing
Maximum Wet Bulb Temperature	33°C		33°C
Altitude Range	-1000 ft to 40000 ft		-1000 ft to 40000 ft

2.5" 2TB SATA3 5400 RPM HDD

2.5" 2TB SATA3 5400 RPM HDD	MT	SFF	USFF	Micro
Capacity (bytes)	2,000,398,934,016			2,000,398,934,016
Dimensions inches (W x D x H)	Approximately (2.75 x 3.951 x 0.268 inches)			Approximately (2.75 x 3.951 x 0.268 inches)
Interface type and Maximum speed	Up to 6Gb/s (SATA 3.0)			Up to 6Gb/s (SATA 3.0)
Internal buffer size	16 MB			16 MB
Average Seek Time	12ms(Read)			12ms(Read)
Rotational Speed	5400 rpm			5400 rpm
Logical Blocks	3,907,029,168			3,907,029,168
Power Source				
Power Consumption (reference only)	Idle 0.7W, Active 3.25W			Idle 0.7W, Active 3.25W
Spin Up Current (reference only)	5V (1A)			5V (1A)
Environmental Operating Conditions (Non-Condensing)				
Temperature Range	5°C to 60°C			5°C to 60°C
Relative Humidity Range	10% to 90% non-condensing			10% to 90% non-condensing
Maximum Dew Point	Operating: 26°C			Operating: 26°C



Temperature	Non-Operating: 33° C		Non-Operating: 33° C
Altitude Range	-1000 ft to 10000 ft		-1000 ft to 10000 ft
Environmental Non-Operating Conditions (Non-Condensing):			
Temperature Range	-40°C to 65°C		-40°C to 65°C
Relative Humidity Range	5% to 95% non-condensing		5% to 95% non-condensing
Maximum Wet Bulb Temperature	33°C		33°C
Altitude Range	-1000 ft to 40000 ft		-1000 ft to 40000 ft

2.5" 128GB SOLID STATE DRIVE

2.5" 128GB SOLID STATE DRIVE	MT	SFF	USFF	Micro
Capacity (bytes)	128,035,676,160			
Dimensions inches (W x D x H)	3.94 x 2.75 x 0.374			
Interface type and Maximum speed	Up to 6Gb/s (SATA 3.0)			
MTBF	>1.5M hours			
Logical Blocks	250,069,680			
Power Source				
Power Consumption (reference only)	Idle 0.5W, Active 2.5W			
Spin Up Current (reference only)	5V (1000mA)			
Environmental Operating Conditions (Non-Condensing)				
Temperature Range	5°C to 60°C			
Relative Humidity Range	10% to 90% non-condensing			
Maximum Dew Point Temperature	Operating: 26°C Non-Operating: 33° C			
Altitude Range	-1000 ft to 10000 ft			
Environmental Non-Operating Conditions (Non-Condensing):				
Temperature Range	-40°C to 65°C			
Relative Humidity Range	5% to 95% non-condensing			
Maximum Wet Bulb Temperature	33°C			
Altitude Range	-1000 ft to 40000 ft			

2.5" 256GB SOLID STATE DRIVE

2.5" 256GB SOLID STATE DRIVE	MT	SFF	USFF	Micro
Capacity (bytes)				256,060,514,304



Dimensions inches (W x D x H)	3.94 x 2.75 x 0.374		3.94 x 2.75 x 0.374
Interface type and Maximum speed	Up to 6Gb/s (SATA 3.0)		Up to 6Gb/s (SATA 3.0)
MTBF	>1.5M hours		>1.5M hours
Logical Blocks	500,118,192		500,118,192
Power Source			
Power Consumption (reference only)	Idle 0.5W, Active 2.5W		Idle 0.5W, Active 2.5W
Spin Up Current (reference only)	5V (1000mA)		5V (1000mA)
Environmental Operating Conditions (Non-Condensing)			
Temperature Range	5°C to 60°C		5°C to 60°C
Relative Humidity Range	10% to 90% non-condensing		10% to 90% non-condensing
Maximum Dew Point Temperature	Operating: 26°C Non-Operating: 33° C		Operating: 26°C Non-Operating: 33° C
Altitude Range	-1000 ft to 10000 ft		-1000 ft to 10000 ft
Environmental Non-Operating Conditions (Non-Condensing):			
Temperature Range	-40°C to 65°C		-40°C to 65°C
Relative Humidity Range	5% to 95% non-condensing		5% to 95% non-condensing
Maximum Wet Bulb Temperature	33°C		33°C
Altitude Range	-1000 ft to 40000 ft		-1000 ft to 40000 ft

Optical Drives

DVD-ROM

DVD-ROM	MT	SFF	USFF	Micro
External Dimensions inches/centimeters (Without Bezel – W x H x D)	148.4mm(6in)/42mm (2in)/171mm (6.73in) (max)	128.0 mm (5.04)/ 12.7mm (0.5 in)/ 126.1mm (4.97in)		
Weight (max) pounds/kilograms	700g	165g		
Interface type and speed	SATA 1.5Gbit/s			
Disc Capacity	Standard			
Internal buffer size	supplier dependent			
Access Times (typical)	supplier dependent			



Maximum Data Transfer Rates			
Writes	N/A		
Reads	16x DVD/48x CD	8x DVD/ 24x CD	
Power Source			
DC Power Requirements	12V, 5V	5V	
DC Current	800mA (12V)/ 1000mA (5V)	1000mA ¹	
Environmental Operating Conditions (Non-Condensing):			
Operating Temperature Range	5C to 50C		
Relative Humidity Range	20% to 80% RH		
Maximum Wet Bulb Temperature	29C		
Altitude Range	-200 to 3048m		
Environmental Non-Operating Conditions (Non-Condensing):			
Operating Temperature Range	-40C to 65C		
Relative Humidity Range	5% to 95% RH		
Maximum Wet Bulb Temperature	38C		
Altitude Range	-200 to 10600m		

DVD-RW

DVD +/- RW ¹	MT	SFF	USFF	Micro
External Dimensions inches/centimeters (Without Bezel – W x H x D)	148.4mm(6in)/42mm (2in)/171mm (6.73in) (max)	128.0 mm (5.04)/ 12.7mm (0.5 in)/ 126.1mm (4.97in)		
Weight (max) pounds/kilograms	700g	170g		
Interface type and speed	SATA 1.5Gbit/s			
Disc Capacity	Standard			
Internal buffer size	supplier dependent			
Access Times (typical)	supplier dependent			
Maximum Data Transfer Rates				
Writes	16x DVD/48x CD	8x DVD/ 24x CD		



Reads	16x DVD/48x CD	8x DVD/ 24x CD	
Power Source			
DC Power Requirements	12V, 5V	5V	
DC Current	800mA (12V)/ 1000mA (5V)	1000mA ²	
Environmental Operating Conditions (Non-Condensing):			
Operating Temperature Range	5C to 50C		
Relative Humidity Range	20% to 80% RH		
Maximum Wet Bulb Temperature	29C		
Altitude Range	-200 to 3048m		
Environmental Non-Operating Conditions (Non-Condensing):			
Operating Temperature Range	-40C to 65C		
Relative Humidity Range	5% to 95% RH		
Maximum Wet Bulb Temperature	38C		
Altitude Range	-200 to 10600m		

Media Card Reader (MCR)

NOTE: Dell 19 in 1 Media Card Reader (MCR) is supported via a F5 to F3 bay converter on the MT and may require a slim line optical drive depending on selectable configuration. MCR is not available on the SFF chassis.

19 in 1 Media Card Reader	MT	SFF	USFF	Micro
External Dimensions inches/(centimeters) (With Bezel – W x H)	3.99/(10.13cm)/1.0/(2.54cm)			
Weight (max) pounds/kilograms	~151g			
Interface type and speed	USB 2.0, 480Mb/s			
Media Supported (maximum capacity supported will vary by Flash Media Types)				
Media Supported	CF I			



	CF II Micro Drive (MD) Secure Digital (SD) SDHC / SDXC Mini Secure Digital (mini-SD) Micro Secure Digital (Micro-SD) (with adapter) Multi Media Card (MMC) RS Multi Media Card (RS-MMC) Multi Media Card plus (MMC plus) RS Multi Media Card plus (RS-MMC plus) Multi Media Card Micro (MMC Micro) (with adapter) Memory Stick (MS) Memory Stick Pro (MS Pro) Memory Stick Pro Duo (MS Pro Duo) Memory Stick Duo (MS-Duo) Memory Stick Micro (MS Micro)(M2) (with adapter) Smart Media (SM) xD			
Support Specification Versions:	Compact Flash type I/II Version 4.0 Smart Media (SM) Specification 2003 Multi Media Card (MMC) Specification 4.2 Secure Digital (SD) 2.0 Memory Stick Pro (MS-PRO) Specification 1.02 Memory Stick (MS) Specification 1.43 xD Specification 1.2			
Power Source				
Max Power Requirements	2.5W			
Supply Voltage Range	4.75V ~ 5.25V			
Power Consumption:	Standby less than 0.5mA @ 5.0VDC			
Environmental Operating Conditions (Non-Condensing):				



Operating Temperature Range	5C to 50C			
Relative Humidity Range	10% to 90% RH			
Environmental Non-Operating Conditions (Non-Condensing):				
Operating Temperature Range	-40C to 65C			
Relative Humidity Range	5% to 95% RH			

BIOS Defaults

	Item	MT/SFF/USFF	Micro
System Configuration	Integrated NIC:	Enable w/PXE	Enable w/PXE
	Serial Port:	Disable	Disable
	SATA Operation:	AHCI	AHCI
	Drives:	Enable(SATA-0, SATA-1, SATA-2,)	Enable(M-SATA, SATA-0)
	SMART Reporting:	Disable	Disable
	USB Configuration:	Enable (Boot Support, Front USB Ports, Rear Dual USB Ports, Rear Quad USB Ports)	Enable (Boot Support, Front Dual USB Ports, Rear Quad USB Ports)
	Miscellaneous Devices:		
	Audio:		Enable
Video	Multi-display:	Disable	
	Primary Display	Auto	
Performance	Multiple Core Support:	All	All
	Intel® SpeedStep™:	Enable	Enable
	C States Control:	Enable	Enable
	Limit CPUID Value:	Disable	Disable



	Intel TurboBoost	Enable	Enable
	Rapid Start Technology		Enable
	HyperThread control:	Enable	Enable
Virtualization Support	Virtualization:	Enable	Enable
	VT for Direct I/O		Enable
	Trusted Execution		Disable
Security	Internal HDD Password		Not Set
	Strong Password:	Disable	Disable
	Password Configuration:	4~32	4~32
	Password Bypass	Disable	Disable
	Password Changes:	Enable	Enable
	TPM Security:	Disable	Disable
	Computrace®:	Deactivate	Deactivate
	Chassis Intrusion		Disable
	CPU XD Support:	Enable	Enable
	Admin Setup Lockout	Disable	
	OROM Keyboard Access		Enable
	Admin Setup Lockout		Disable
	HDD Protection Support		Disable
Power Management	AC Recovery:	Power Off	Power Off
	Auto On Time:	Disable	Disable
	Deep Sleep Control:	Enable in S4 & S5	Enable in S4 & S5
	Fan Control Override:	Disable	
	USB Wake Support**		S3 Enable / S4 Disable / S5 Off
	Wake on LAN/WLAN:	Disable	Disable
	Block sleep	Disable	Disable
	ISCT		Disable



*** With USB Wake Support from Standby (S3) – Enables both the Keyboard and Mouse to wake the system, no matter which USB ports are used.

- With USB Wake Support from Hibernate/Off (S4/S5) – A wired Keyboard or Mouse is able to wake the system if connected to the designated USB port (marked with smart power on icon). For wireless keyboard and mice, if both devices share the same USB dongle and the dongle is inserted into the designated USB port, both Keyboard and mouse can wake the system. For wireless Keyboard only or mouse only, either could wake the system as long as the dongle is inserted into the designated USB port.

- Note that the user can go into the Windows Device Manager's Power Management tab for the Keyboard or Mouse and disable the devices ability to Wake the system.

Maintenance	Service Tag:	Set by the factory	Set by the factory
	Asset Tag:	Optional User Entry	Optional User Entry
	SERR Message:	Enable	Enable
POST Behavior	Numlock LED:	Enable	Enable
	Keyboard Errors:	Enable	Enable
Cloud desktop	Server Lookup Method:		DNS
	Server Name:		CDServer
	Server IP Address:		255.255.255.255
	Server Port:		06910
	Client Address Method:		DHCP
	Client IP Address		255.255.255.255
	Client Subnet Mask		255.255.255.255
	Client Gateway		255.255.255.255
	DNS IP Address		255.255.255.255
	Advanced		Disable
Wireless	Wireless Device Enable		Enable(WLAN/WiGig Bluetooth)



CHASSIS ENCLOSURE & VENTILATION REQUIREMENTS

ENCLOSURE VENTILATION

If your enclosure has doors, they need to be of a type that allows at least 30% airflow through the enclosure (front and back).

ENCLOSURE MINIMUM CLEARANCE

Leave a 10.2 cm (4 in.) minimum clearance on all vented sides of the computer to permit the airflow required for proper ventilation.

RECOMMENDED ENCLOSURE

Do not install your computer in an enclosure that does not allow airflow. This restricts the airflow and impacts your computer's performance, possibly causing it to overheat.

OPEN DESK MINIMUM CLEARANCE

If your computer is installed in a corner, on a desk, or under a desk, leave at least 5.1 cm (2 in.) clearance from the back of the computer to the wall to permit the airflow required for proper ventilation.



REGULATORY AND ENVIRONMENTAL COMPLIANCE

Product related conformity assessment and regulatory authorizations including Product Safety, Electromagnetic Compatibility (EMC), Ergonomics, and Communication Devices relevant to this product may be viewed at www.dell.com/regulatory_compliance. The Regulatory Datasheet for this product is located at http://www.dell.com/regulatory_compliance.

Details of Dell's environmental stewardship program to conserve product energy consumption, reduce or eliminate materials for disposal, prolong product life span and provide effective and convenient equipment recovery solutions may be viewed at www.dell.com/environment. Product related conformity assessment, regulatory authorizations, and information encompassing Environmental, Energy Consumption, Noise Emissions, Product Materials Information, Packaging, Batteries, and Recycling relevant to this product may be viewed by clicking the Design for Environment link on the webpage.



Acoustic Noise Emission Information

OptiPlex 9020 MT

Component	Test Configuration
CPU	Intel i5-4570 3.2GHz
Memory	8G DD3,1600 x 2pcs
HDD (#, capacity)	WD 1T 3.5inch x2
RMSD	19 in 1 card reader
Graphics Adapter	HD 8570

Declared Sound Power (LWAd)

The Declared Noise Emission in accordance with ISO 9296 for the OptiPlex 3020 MT is as follows: (all values LWAd expressed in bels; 1 bel=10 decibels, re 10-12 Watts)

Operating Mode	Declared Sound Power(LWAd)
Idle	3.8
HDD Operating	4.0
CPU Stressed	3.8
ODD Operating	4.2

A-Weighted Sound Pressure Level (dB)

The Declared A-weighted Sound Pressure Level in decibels (re 2x10⁻⁵ Pa), at Operator and Bystander Positions are measured in accordance with ISO 7779 7.6.1, 7.6.2, and C.15.2 and declared in accordance with ISO 9296 for this product is as follows¹:

Declared Sound Pressure (LpA)				
	Tabletop System		Floor Standing System	
Operating Mode	Operator Position	Bystander Position	Operator Position	Bystander Position
Idle	27.5	n/a	n/a	n/a
HDD Operating	n/a	n/a	n/a	n/a
CPU Stressed	29.2	n/a	n/a	n/a
ODD Operating	n/a	n/a	n/a	n/a

1 All tests are conducted according to ISO 7779 and declared according to ISO 9296 except CPU Stressed. This test mode is not specified in ISO 7779, but was measured using the same microphone distances and measurement techniques defined for the other reported operating modes.

2 Declared Sound Power rounded to nearest tenth of a bel per ISO 9296 section 4.4.2



Acoustic Noise Emission Information

OptiPlex 9020 SFF

Component	Test Configuration
CPU	Intel i5-4570 3.2GHz
Memory	8G DD3,1600 x 2pcs
HDD (#, capacity)	Seagate 1T 3.5 inch x1
RMSD	19 in 1 card reader
Graphics Adapter	HD 8570

Declared Sound Power (LWAd)

The Declared Noise Emission in accordance with ISO 9296 for the OptiPlex 3020 SFF is as follows: (all values LWAd expressed in bels; 1 bel=10 decibels, re 10-12 Watts)

Operating Mode	Declared Sound Power(LWAd)
Idle	3.6
HDD Operating	3.7
CPU Stressed	4.8
ODD Operating	3.6

A-Weighted Sound Pressure Level (dB)

The Declared A-weighted Sound Pressure Level in decibels (re 2x10⁻⁵ Pa), at Operator and Bystander Positions are measured in accordance with ISO 7779 7.6.1, 7.6.2, and C.15.2 and declared in accordance with ISO 9296 for this product is as follows¹:

Declared Sound Pressure (LpA)				
	Tabletop System		Floor Standing System	
Operating Mode	Operator Position	Bystander Position	Operator Position	Bystander Position
Idle	25.2	n/a	n/a	n/a
HDD Operating	n/a	n/a	n/a	n/a
CPU Stressed	31.9	n/a	n/a	n/a
ODD Operating	n/a	n/a	n/a	n/a

1 All tests are conducted according to ISO 7779 and declared according to ISO 9296 except CPU Stressed. This test mode is not specified in ISO 7779, but was measured using the same microphone distances and measurement techniques defined for the other reported operating modes.

2 Declared Sound Power rounded to nearest tenth of a bel per ISO 9296 section 4.4.2



Acoustic Noise Emission Information

OptiPlex 9020 USFF

Component	Test Configuration
CPU	Intel i5-4570 3.2GHz
Memory	8G DD3,1600 x 2pcs
HDD (#, capacity)	Seagate 1T 3.5 inch x1
RMSD	19 in 1 card reader
Graphics Adapter	HD 8570

Declared Sound Power (LWAd)

The Declared Noise Emission in accordance with ISO 9296 for the OptiPlex 3020 SFF is as follows: (all values LWAd expressed in bels; 1 bel=10 decibels, re 10-12 Watts)

Operating Mode	Declared Sound Power(LWAd)
Idle	3.6
HDD Operating	3.7
CPU Stressed	4.8
ODD Operating	3.6

A-Weighted Sound Pressure Level (dB)

The Declared A-weighted Sound Pressure Level in decibels (re 2x10⁻⁵ Pa), at Operator and Bystander Positions are measured in accordance with ISO 7779 7.6.1, 7.6.2, and C.15.2 and declared in accordance with ISO 9296 for this product is as follows¹:

Declared Sound Pressure (LpA)				
Operating Mode	Tabletop System		Floor Standing System	
	Operator Position	Bystander Position	Operator Position	Bystander Position
Idle	25.2	n/a	n/a	n/a
HDD Operating	n/a	n/a	n/a	n/a
CPU Stressed	31.9	n/a	n/a	n/a
ODD Operating	n/a	n/a	n/a	n/a

1 All tests are conducted according to ISO 7779 and declared according to ISO 9296 except CPU Stressed. This test mode is not specified in ISO 7779, but was measured using the same microphone distances and measurement techniques defined for the other reported operating modes.

2 Declared Sound Power rounded to nearest tenth of a bel per ISO 9296 section 4.4.2



Acoustic Noise Emission Information

OptiPlex 9020 Micro

Component	Test Configuration
CPU	Intel I5-4590T 4C,2.0GHz
Memory	2G DDR3L,1600 x 2pcs
HDD (#, capacity)	SEAGATE 5HW4R,500G x1
RMSD	N/A
Graphics Adapter	Intel Integrated

Declared Sound Power (LWAd)

The Declared Noise Emission in accordance with ISO 9296 for the OptiPlex 3020 SFF is as follows: (all values LWAd expressed in bels; 1 bel=10 decibels, re 10-12 Watts)

Operating Mode	Declared Sound Power(LWAd)
Idle	2.8
HDD Operating	2.8
CPU Stressed	4.0
ODD Operating	N/A

A-Weighted Sound Pressure Level (dB)

The Declared A-weighted Sound Pressure Level in decibels (re 2x10⁻⁵ Pa), at Operator and Bystander Positions are measured in accordance with ISO 7779 7.6.1, 7.6.2, and C.15.2 and declared in accordance with ISO 9296 for this product is as follows:

Declared Sound Pressure (LpA)				
	Tabletop System		Floor Standing System	
Operating Mode	Operator Position	Bystander Position	Operator Position	Bystander Position
Idle	18.0	16.7	n/a	n/a
HDD Operating	18.1	16.7	n/a	n/a
CPU Stressed	30.9	26.1	n/a	n/a
ODD Operating	n/a	n/a	n/a	n/a

1 All tests are conducted according to ISO 7779 and declared according to ISO 9296 except CPU Stressed. This test mode is not specified in ISO 7779, but was measured using the same microphone distances and measurement techniques defined for the other reported operating modes.



2 Declared Sound Power rounded to nearest tenth of a bel per ISO 9296 section 4.4.2

